

Give Leafy Spurge Biocontrol a chance to work for YOU

SIDNEY, Montana - Spring has sprung, and that means leafy spurge will soon be making its annual, albeit unwelcome, appearance on everything from rangeland to roadsides and railroad right-of-ways. With that in mind, the USDA-ARS's TEAM Leafy Spurge is reaching out to ranchers, landowners and land managers who aren't yet sold on the potential benefits of biological control.

"We realize some people are still skeptical, that they just aren't convinced biological control can work for them," said Chad Prosser, TEAM

These before and after pictures, taken from far different types of ecosystems, show good examples of what can happen when leafy spurge flea beetles successfully establish a population.

Leafy Spurge coordinator. "But we've seen enough success stories to know it can and will work if it's done right. We're hoping everyone – especially those who haven't tried or who tried but didn't have any luck – will give biological control a chance."

Several members of the USDA-ARS's five-year TEAM Leafy Spurge research and demonstration program agree that biological control of leafy spurge is more achievable now than ever before.

Bob Richard, director of the USDA-Animal & Plant Health Inspection Service's Plant Protection Quarantine and Biological Control of Weeds Laboratory in Bozeman, Mont., says a lot of the success depends on how, where and when initial releases of biological control agents are made.

"We now know a lot more about how to make the initial release, which agents work best in which situations, and how many insects should be released," Richard said. "By taking a few of these things into consideration, you can significantly boost your chances of making a successful release and getting a good population of biocontrol agents established."

Richard, an entomologist, has made more than 2,000 releases of the host specific *Aphthona* species leafy spurge flea beetle in a variety of habitats spread across 19 states during the past 12 years. More than 80 percent of those releases have resulted in established pop-

BEFORE/1994
Bridger Mountains, Montana



AFTER/1997



BEFORE/1994
Forget Me Not Lake, Minnesota



After/1997



For more information on TEAM Leafy Spurge, contact program coordinator Chad Prosser at 406/433-9403 (cprosser@sidney.ars.usda.gov), see the TEAM Leafy Spurge web site at <http://www.team.ars.usda.gov> or write to TEAM Leafy Spurge, USDA-ARS Northern Plains Agricultural Research Laboratory, 1500 Central Ave., Sidney MT 59270.

ulations that are now contributing to leafy spurge control.

"Establishment is absolutely the key," Richard said. "If you don't get good establishment, you can't expect good control."

Don Kirby, a professor of Animal & Range Science at North Dakota State University and member of the TEAM Leafy Spurge inventory and assessment team, said people also need to understand that biological control is a sustainable, long-term solution but not a "quick fix."

"Some people just aren't patient enough, and that's easy to understand – if you've got a leafy spurge problem, you want to get it taken care of NOW," Kirby said. "But biological control isn't going to work overnight – it's something you start now to achieve inexpensive, permanent control in the future."

Some of the flea beetle release sites Kirby is studying are eight years old, but he said the results have been worth the wait.

"It's pretty impressive," he said. "We've seen dramatic reductions in leafy spurge stem densities – in some cases from 218 plants per square meter to five – and a corresponding increase in the production of desirable grasses."

The sites also provide a good example of why it's important to consider the long-term benefits biological control can provide, he

"If you give leafy spurge flea beetles a decent chance, they'll work GREAT!"

More than 80 percent of the 2,000-plus flea beetle releases made by Bob Richard, director of the USDA-APHIS Biocontrol of Weeds Laboratory in Bozeman, Montana, have resulted in established populations. Failure, he says, is generally the result of how, when or where the insects are released.

added.

"Leafy spurge will never again be a deterrent to livestock production on these sites because the flea beetles will always be there," he said. "The flea beetles and spurge have reached a natural balance – if the spurge increases, flea beetle populations will increase and keep it under control. The bottom line is simple: The

sooner you get started, the sooner biological control will work."

Richard and Kirby offered the following generalities for increasing the chances of making a successful release of flea beetles:

- *Site location:* Drier and sunnier is better, and some slope (to provide drainage) is a plus. "Flea beetles will move into shady, moist locations after a population is established, but we've learned that these are not good places to make an initial release," Richard said. There is also some variation according to species, he added. "*Nigriscutis* prefers a dry, sunny site while *lacetosa* will toler-

ate a much broader range of locations."

- *Timing:* Insects must be released before they lay eggs! "If you release insects too late in the season, they won't reproduce and there won't be any insects next year," Kirby said. Although timing depends on several factors, including geography, elevation and climactic conditions, anything later than mid-July is

BEFORE/1992
Valley City, N.D.



Before – Leafy spurge dominates the landscape, displacing native species and desirable grasses.

After – Flea beetles are reducing the weed's competitive advantage, giving other vegetation a chance to reestablish.

AFTER/1994



generally considered too late, Richard said.

• *Number of insects released:* More is better. "Early releases generally consisted of 500 or fewer flea beetles, but we're now focusing on releases of at least 1,000," Richard said. "Releasing more insects enhances the chances of establishing a population."

Another common problem, Richard said, is that people often release insects at a site with plenty of spurge but none of the other ingredients needed for a successful release.

"Again, people need to understand that successfully establishing a population is the key," he said. "If you can get a population started, the insects will eventually move to the places where you most want or need control. But that may not be the best place to try and get a population started."

Richard says he gets a little defensive when people say the insects "failed."

"Failure is generally a result of how or where the insects were released," he said. "But we can minimize failure by using all of the things we've learned over the past 10 years. If you give leafy spurge flea beetles a decent chance, they'll work great!"

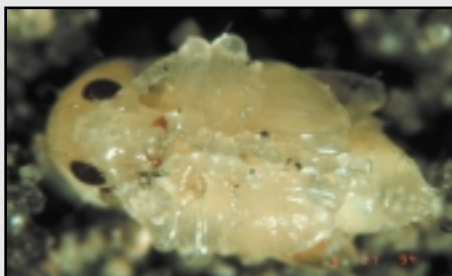
While ecologically based tools such as biological control are the foundation of TEAM Leafy Spurge's Integrated Pest Management (IPM) approach to controlling leafy spurge, Prosser said it's just one of the tools in the IPM arsenal.

"We want people to give biological control a chance, but we don't want them to ignore other control tools," he said. "Herbicides are still the preferred tool for containing and preventing the spread of spurge infestations, for example, and sheep are an excellent tool for controlling spurge while diversifying cattle grazing operations. Biological control is just one of the tools that are available and can be used."

Prosser, Richard and Kirby encouraged peo-



Adult flea beetles (above) are visible when feeding on leafy spurge. Most of the damage, however, is caused by root-feeding larvae (right). Flea beetles spend roughly 80 percent of their lives underground, including the time it takes to change from a pupa (below)



into an adult. Flea beetles and biological control offer an effective, affordable and sustainable alternative to controlling leafy spurge, and should always be considered when developing a long-term leafy spurge management plan.

ple with questions about biological control to seek out the information that can help contribute to establishing a successful release site.

"If you have questions about biocontrol or Integrated Pest Management strategies for leafy spurge, give me a call," Prosser said. "We want to make sure people have the information they need to make biological control work."

Contact TEAM Leafy Spurge at the USDA-ARS Northern Plains Agricultural Research Laboratory, 1500 N. Central Ave., Sidney MT 59270 (406/482-9403 or 406/482-2020), or see the TEAM Leafy Spurge website at www.team.ars.usda.gov.

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For more information...

TEAM Leafy Spurge

- Gerry Anderson, co-principal investigator (406/433-9416; ganderson@sidney.ars.usda.gov), or Chad Prosser, program coordinator (406/433-9403; cprosser@sidney.ars.usda.gov), USDA-ARS Northern Plains Agricultural Research Laboratory, 1500 N. Central Ave., Sidney MT 59270; Lloyd Wendel, co-principal investigator, USDA-APHIS PPQ/Mission Plant Protection Center, Moore Air Force Base, Building S6414, Mission TX 78572 (956/580-7301; lloyd.e.wendel@usda.gov)

Biological Control

- Bob Richard, USDA-APHIS PPQ/Biological Control of Weeds Laboratory, 1648 S. 7th Ave., Bozeman MT 59717 (406/994-5033; robert.d.richard@usda.gov).

- Don Mundal, North Dakota State University/Dept. of Entomology, 202 Hultz Hall, Fargo ND 58105 (701/231-7920; dmundal@prairie.nodak.edu).

Obtaining Insects

- Montana - USDA-APHIS, 1629 Ave. D/Suite 5-A, Billings MT 59103 (406/657-6282); Jerry Marks, Montana State University Extension Service, 126 West Spruce St., Missoula MT 59802-4204 (406/721-4095; acxgm@montana.edu).

- North Dakota - USDA-APHIS, 3509 Miriam Ave./Suite A, Bismarck ND 58501 (701/250-4473); Dave Nelson, state entomologist, North Dakota Dept. of Agriculture, 600 E. Boulevard/6th Floor, Captial Building, Bismarck ND 58505 (701/328-4765; dnelson@state.nd.us).

- South Dakota - USDA-APHIS PPQ, PO Box 250, Pierre SD 57501 (605/224-1713); Ron Moehring, weed pest supervisor, South Dakota Dept. of Agriculture, 523 E. Capital, Pierre 57501 (605/773-3796; ron.moehring@state.sd.us).

- Wyoming - USDA-APHIS PPQ, 504 W. 17th St., Cheyenne WY 82001 (307/772-2323); Lars Baker, Fremont County Weed & Pest, County Courthouse/ Room 315, Lander WY 82520 (307/332-1052).

Herbicides

- Rod Lym, North Dakota State University/ Dept. of Plant Science, Loftgard Hall, Fargo N.D. 58105 (701/231-8996; lym@plains.nodak.edu).

- Leon Wrage, South Dakota State University Extension Service, Ag Hall/Box 2207A, Brookings SD 57007 (605/688-4602; wrage@ur.sdstate.edu).

Multi-Species Grazing

- Tim Faller, North Dakota State University/ Hettinger Research Extension Center, Box 507, Hettinger N.D. 58639 (701/567-4327; tfaller@ndsuent.nodak.edu)

Range Management

- Don Kirby, North Dakota State University/Dept. of Animal & Range Science, Hultz Hall, Fargo ND 58105 (701/231- 8386; dkirby@ndsuent.nodak.edu).

- Jack Butler, Central Missouri State University/ Dept. of Biology, Warrensburg MO 64093 (660/543-8877; butler@cmsu1.cmsu.edu).

General Weed Control

- Roger Sheley, noxious weed specialist, Montana State University Extension Service, Leon Johnson Hall, Bozeman MT 59717 (406/994-5686; ussrs@montana.edu).

- Ken Eraas, noxious weed specialist, North Dakota Dept. of Agriculture, 600 E. Boulevard Ave./Dept. 602, Bismarck ND 58505-0020 (701/328-2980; keraas@state.nd.us).

Web Sites

The following web sites provide good information and links to other informational sites.

• TEAM Leafy Spurge

(<http://www.team.ars.usda.gov>) for information on biological control, Integrated Pest Management and related topics. The site also features an extensive listing of other informational sources and web sites.

• APHIS Noxious Weeds Home Page

(<http://www.aphis.usda.gov/ppq/weeds/weed-home.html>) for general information on noxious weeds and APHIS programs.

• NDSU-Hettinger Research Extension Center

(<http://www.ag.ndsu.nodak.edu/hettinger/>) for information on multi-species grazing, sheep and range health.

• NDSU-Dept. of Agricultural Economics

(<http://agecon.lib.umn.edu/ndsu.html>) for information on the socio-economic impacts of leafy spurge, the economics of integrating sheep & cattle, and the feasibility of sheep cooperatives.

• NDSU Extension Service

(<http://www.ext.nodak.edu/extpubs/>) features a wealth of information. Extension Service bulletins with pertinent information can be found in the agricultural economics, animal science, entomology, plant science and water quality sections of the directory.